

Amendments to the Claims

Claims 1-10. (Cancelled)

11. (Currently Amended) A three-dimensional input apparatus comprising:

a projector for irradiating a detection light beam on an object;

a scanning mechanism for scanning said object by deflecting the direction of irradiation of said detection light beam;

an image sensing device with an image sensing surface including a plurality of two-dimensionally arranged light-receiving elements, for receiving the detection light beam reflected on said object; and

a controller for controlling an [[the]] electric charge accumulation time of said plurality of light-receiving elements such that the scanning mechanism moves the detection light beam for each sampling period and a plurality of types of outputs with different electric charge accumulation times are produced by each of said light-receiving elements in one light-receiving area for each sampling period, discriminating whether at least one of said plurality of types of output signals is saturated for each one of the two-dimensionally arranged light-receiving elements or for each part of the two-dimensionally arranged light-receiving elements, and selecting non-saturated signals among said plurality of types of output signals for each one of the plurality of two-dimensionally arranged light-receiving elements or for each part of the plurality of two-dimensionally arranged light-receiving elements, based on the result of the discrimination,

wherein the controller controls said image sensing device so as to output a signal corresponding to the accumulated electric charge upon lapse of a first accumulation time and

continue to accumulate electric charge while maintaining said accumulated electric charge until a second charge accumulation time, and

wherein the controller outputs a signal by multiplying an output value during a first accumulation time by a multiple derived from a ratio between accumulation times.

12. (Cancelled)

13. (Currently Amended) An apparatus according to claim 13, [[12,]]

wherein said controller selects among said non-saturated signals one having a long electric charge accumulation time.

14. (Cancelled)

15. (Previously Presented) A three-dimensional input apparatus comprising: a projector for irradiating a detection light beam on an object;

a scanning mechanism for scanning said object by deflecting the direction of irradiation of said detection light beam;

an image sensing device having an image sensing surface including a plurality of two-dimensionally arranged light-receiving elements for receiving the detection light beam reflected on said object;

a controller for controlling said image sensing device so as to output a first signal due to a first electric charge accumulation time and a second signal due to a second electric charge

accumulation time equal to a predetermined multiple of said first signal during the electric charge accumulation of said image sensing device;

a selecting circuit for selecting said second signal in the case where said second signal has not been saturated and selecting a signal of a size equal to said predetermined multiple of said first signal in the case where said second signal has been saturated; and

a processor for performing calculations using the selected signal, said selecting circuit including:

a first switch, a second switch, a memory, a comparator, and an integrator, wherein said first switch receives the first and second signals, outputs the first signal to the memory and outputs the second signal to the second switch and to the comparator, the integrator receives the first signal from the memory and outputs the signal of a size equal to said predetermined multiple of said first signal to the second switch, and the comparator compares the second signal to a reference saturation level and outputs a control signal to the second switch to output the second signal where the second signal has not been saturated, and to output the signal of a size equal to said predetermined multiple where the second signal has been saturated.

Claims 16-23. (Cancelled)

24. (Currently Amended) A three-dimensional input method for irradiating an object using a three-dimensional input apparatus, wherein the apparatus includes a projector, a scanning mechanism, an image sensing device with an image sensing surface including a plurality of two-dimensionally arranged light-receiving elements, and a controller, the method comprising:
irradiating a detection light beam on the object;

scanning said object by deflecting the direction of irradiation of said detection light beam;

controlling an electric charge accumulation time of said plurality of light-receiving elements such that the scanning mechanism moves the detection light beam for each sampling period and a plurality of types of outputs with different electric charge accumulation times are produced by each of said light-receiving elements in one light-receiving area for each sampling period, discriminating whether at least one of said plurality of types of output signals is saturated for each one of the two-dimensionally arranged light-receiving elements or for each part of the two-dimensionally arranged light-receiving elements;

selecting non-saturated signals among said plurality of types of output signals for each one of the plurality of two-dimensionally arranged light-receiving elements or for each part of the plurality of two-dimensionally arranged light-receiving elements, based on the result of the discrimination;

controlling the image sensing device so as to output a signal corresponding to the accumulated electric charge upon lapse of a first accumulation time and continue to accumulate electric charge while maintaining said accumulated electric charge until a second charge accumulation time; and

outputting a signal by multiplying an output value during a first accumulation time by a multiple derived from a ratio between accumulation times.

irradiating a detection light beam on an object;

scanning said object by deflecting the direction of irradiation of said detection light beam;

~~receiving the detection light beam reflected on said object by an image sensing device with an image sensing surface including a plurality of two dimensionally arranged light-receiving elements;~~

~~controlling the electric charge accumulation time of said light-receiving elements such that the scanning mechanism moves the detection light beam for each sampling period and a plurality of types of outputs with different electric charge accumulation times are produced by each of said light-receiving elements in one light-receiving area for each sampling period;~~

~~discriminating whether at least one of said plurality of types of output signals is saturated for each one of the two dimensionally arranged light-receiving elements or for each part of the two dimensionally arranged light-receiving elements; and~~

~~selecting non-saturated signals among said plurality of types of output signals for each one of the plurality of two dimensionally arranged light-receiving elements or for each part of the plurality of two dimensionally arranged light-receiving elements, based on the result of the discrimination.~~

25. (Cancelled)

26. (Previously Presented) A method according to claim 24, wherein said selection of the non-saturated signals is carried out so that non-saturated signals having a long electric charge accumulation time are selected.

27. (Cancelled)